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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/594,475

09/28/2006

Yoshiharu Ohta

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EXAMINER

PARVINI, PEGAH

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/594,475	<b>Applicant(s)</b> OHTA ET AL.	
	<b>Examiner</b> PEGAH PARVINI	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 December 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2,7 and 9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,7 and 9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicants' submission filed on December 8, 2009 has been entered.

### ***Response to Amendment***

This Office Action is in response to the RCE filed on December 8, 2009. After entry of the RCE, claims 1-2, 7 and 9 are currently pending in this application.

Applicants' amendment to claim 1, filed December 8, 2009, page 2, by deleting the recitation of "no more than 140,000/0.5 ml" has overcome the 112-first paragraph rejection as presented previously. Therefore, said rejection is hereby withdrawn.

Applicants' amendment to claim 1, filed December 8, 2009, page 2, by inserting the recitation of "wherein an average particle diameter of the particles of the fumed silica is in a range of 5 nm to 20 nm" has overcome the rejection using Pasqualoni et al. (2003/0104770) and Tamai et al. as the primary references.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1-2, 7 and 9** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. 2004/015050 to Pasqualoni et al. in view of U.S. Patent No. 6,248,144 to Tamai et al. and further in view of U.S. Patent Application Publication No. 2004/0127047 to Yamada et al.

Pasqualoni et al. teach a polishing composition comprising 10 weight percent fumed silica (i.e. is to be noted that this is a preferred amount), an acidic component, and a basic component (i.e. ammonium hydroxide) (Abstract; [0024]-[0025]). With reference to coarse particles, Pasqualoni et al. disclose a large particle count of preferably about 25 to about 150,000 particles having a particle size greater than about 0.5 $\mu$ m in about 30  $\mu$ L (i.e. about 416 particle to 250,000 particles per 0.5 ml) (Abstract; [0024]). Additionally, the reference discloses the use of fumed silica in a concentration of about 4% to about 10% ([0025]). Furthermore, the reference discloses that in order to further enhance the chemical activity of the composition, additionally chemicals *may* be added such as surfactants, corrosion inhibitors, stabilizing agents such as potassium hydroxide, and acids such as sulfuric acids ([0037]-[0044]).

It is to be noted that the reference teaches an overlapping range of particle count for large particles (i.e. coarse particles) with the ones instantly claimed, and overlapping ranges have been held to establish *prima facie* obviousness. MPEP 2144.05.

Although Pasqualoni et al., in paragraph [0035], may appear to disclose the use of an oxidizer, it is to be noted that the use of said compound is made optional by clearly stating that “The slurry composition of the present invention *may* further comprise an oxidizer”.

This reference is silent as to the bulk density of the fumed silica and the processing conditions used to make the slurry. Additionally, this reference does not expressly and/or literally disclose an average particle size for the fumed silica particles.

With respect to the bulk density, this is obvious motivated by the fact that the Tamai et al. teach beneficial reasons to make a polishing composition by using fumed silica with their claimed bulk density of at least 70 g/L (column 4, lines 7-23).

Although Pasqualoni et al. may not expressly and/or literally disclose an average particle diameter of the particles of fumed silica, the reference clearly discloses the use of fumed silica as abrasive particles. An average particle size for fumed silica as that claimed instantly or an overlapping range such as 5 to 30 nm would have been obvious to a person ordinary skill in the art motivated by the fact that smaller particle sizes such as 5-30 nm are known to prevent an increase in haze and prevent an occurrence of scratches during polishing as that shown and evidenced by Yamada et al. ([0007], [0027]). It should be noted that the disclosure of Pasqualoni et al. on the count of large particle size clearly shows that the reference is aiming at obtaining small particle sizes.

Art Unit: 1793

With respect to the process limitations (i.e., mixing an alkali aqueous solution with an acidic solution, as is apparent from the claims, Pasqualoni et al. clearly teaches these, however, assuming arguendo, applicants use process limitations to define the product and "product-by- process" claims do not patentably distinguish the product even though made by a different process. In re Thorpe 227 USPQ 964.

Assuming arguendo about the limitations "alkali solution" and "acidic solution", it is to be noted that the primary reference uses both an acid and a base in the composition, and although not designated as both being "solutions", this is immaterial because the composition will still contain an acid, base and water, irrespective of the acid and base being initially in solution or not. Thus, the burden is shifted to Applicants to establish why the reference fails to read on the above limitations or the final polishing composition.

### ***Response to Arguments***

Applicants' arguments with respect to claims 1-2, 7 and 9 have been considered but are moot in view of the new ground(s) of rejection.

Nevertheless, since the two Pasqualoni et al. references are similar, the following argument drawn to Pasqualoni et al. (2003/0104770) is being addresses:

Applicants have argued that argued that Pasqualoni et al. (2003/0104770) do not disclose the coarse particle count as instantly claimed in the amended claims, and that the count disclosed by said reference is much larger than the one claimed.

The Examiner, respectfully, submits that while Pasqualoni et al. may not expressly disclose a range of count of coarse (i.e. large) particles which would sufficiently anticipated the claimed range (i.e. 66,595/0.5ml to 112,453/0.5ml), the reference clearly discloses an overlapping range of count of large particles which is "less than about" 150,000 particle having a particle size of greater than 0.5micron in 30  $\mu$ L (i.e. 250,000 in 0.5ml).

With reference to the currently used Pasqualoni et al. reference (i.e. 2004/015050), said reference, also, discloses an overlapping range of particle size by disclosing that a large particle count of about 25 to about 150,000 particles having a particle size greater than about 0.5m in about 30  $\mu$ L (i.e. about 416 particle to 250,000 particles per 0.5 ml). Overlapping ranges have been held to establish *prima facie* obviousness. Therefore, even though the reference may not disclose a particle size in terms of large particle size count which would sufficiently anticipate the claimed range, the reference clearly discloses an overlapping range.

Furthermore, with reference to criticality, Applicants have argued that using the claimed composition, the fumed silica is prevented from being agglomerated and reduce and/or prevent polishing flaws in a semiconductor device due to criticality of the maximum amount of coarse particles, and additionally, Applicants refer to certain paragraphs (namely, [0017], [0025], [0083]).

Art Unit: 1793

The Examiner, respectfully, submits that said paragraphs do not discuss the criticality of the maximum amount of coarse particles; therefore, they are not taken to provide critical evidence or data for the amount of coarse particles.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PEGAH PARVINI whose telephone number is (571)272-2639. The examiner can normally be reached on Monday to Friday 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on 571-272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Pegah Parvini/  
Examiner, Art Unit 1793

/Anthony J Green/  
Primary Examiner, Art Unit 1793